

(19)日本国特許庁(JP)

(12) 公開特許公報(A)

(11)特許出願公開番号

特開平6-118353

(43)公開日 平成6年(1994)4月28日

(51)Int.Cl.<sup>5</sup>

G 0 2 C 7/06

識別記号

庁内整理番号

F I

技術表示箇所

審査請求 未請求 請求項の数1(全 3 頁)

(21)出願番号 特願平4-287094

(22)出願日 平成4年(1992)10月2日

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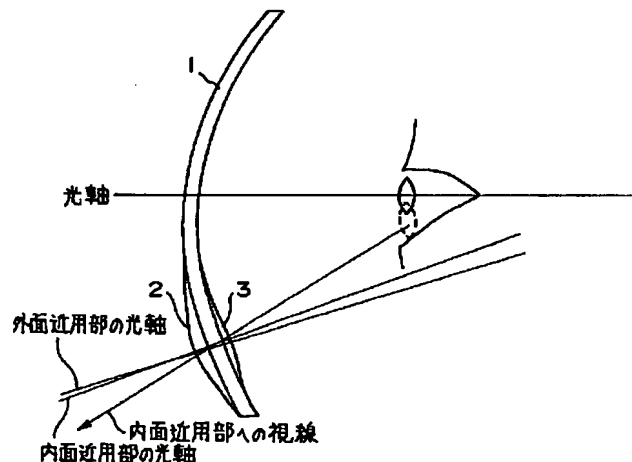
(54)【発明の名称】 多焦点レンズ

(57)【要約】

【目的】 多焦点レンズにおいて、従来、限度とされていた近用部の度数を上げることができ、かつ近用部の光軸に視線を近づけることができるようにする。

【構成】 多焦点レンズにおいて、遠用部(1)の内側カーブ面に、累進帯を介して近用部(3)を設ける。

【作用・効果】 単焦レンズでは、内側カーブ面と外側カーブ面からそれぞれ見たとき、同じ度数でも両者のあいだに、若干の度数差がある。そこで、外側カーブ面に近用部(2)を設けるかわりに、内側カーブ面に近用部(3)を設ける構成にすると、同じ近用部厚さで、近用部の度数を上げることが可能となる。また、近用部の光軸に視線を近づけることができる。



## 【特許請求の範囲】

【請求項1】 遠用部の内側カーブ面に累進帯近用部が設けられていることを特徴とする多焦点レンズ。

## 【発明の詳細な説明】

## 【0001】

【産業上の利用分野】 本発明は、眼鏡用レンズに係るもので、特に遠近両用の累進多焦点レンズの改良に関する。

## 【0002】

【従来の技術】 従来の累進多焦点レンズは、図3～4に示すように、遠用部(1)の外側カーブ面の下部に、累進帯を介して近用部(2)を一体に形成した構造のものが多用されている。図5は、この多焦点レンズの主注視線A-B上での表面屈折力の変化を示したものである。

## 【0003】

【発明が解決しようとする課題】 上記構成の累進多焦点レンズにあっては、遠用部に設ける部と近用部の度数を上げるために近用部(2)を厚くすると、非点収差(累進帯による屈折面のねじれ現象)の分布範囲が広がるため、現在製作可能なものは、加入度3.00ジオプタが限度とされている。また、近用部の度数を上げるために近用部を厚くすると、それだけレンズはプリズム変化で歪みが大きくなる。

## 【0004】

【発明の目的】 本発明は、前述した累進多焦点レンズの欠点を解消するためになされたもので、従来、限度とされていた近用部の度数を上げることを可能とし、かつ非点収差を最小限に抑えて構成することができる多焦点眼鏡用レンズを提供することを主たる目的としている。

## 【0005】

【課題を解決するための手段】 本発明者は、上記問題について種々研究実験を行なった結果、単焦点レンズの外側カーブ面と内側カーブ面とのあいだに度数差のあることに着目し、この度数差を利用することで、上記問題の解決を図ったものである。すなわち、本発明は、累進多焦点レンズの構成において、遠用部の内側カーブ面に累進帯で結ばれた近用部を設けた構成を要旨としている。

## 【0006】

【作用】 上記構成によれば、内側カーブ面に設ける近用部は、外側カーブ面に設ける場合に比べ、両者の度数差分だけ薄くすることが可能となる。このように近用部を薄くできれば、必然的に非点収差の分布範囲が縮小されるので、従来、限度とされていた近用部度数を越えた多焦点眼鏡レンズが得られる。

## 【0007】

【実施例】 図1に、本発明の一実施例を示す。同図において、(1)は遠用部であり、(3)は遠用部の内側カーブ面に累進帯を介して一体に形成された近用部である。図2は、従来のレンズと本発明のレンズとを対比させた構成説明図である。

【0008】 単焦点レンズでは、内側カーブ面および外側カーブ面からそれぞれ見たとき、同じ度数でも両者のあいだに、レンズの中心厚みによっても多少違いがあるが、約0.05ジオプタの度数差(外カーブ面ではプラス、内カーブ面ではマイナス)がある。また遠用部をS+2.00ジオプタにして、近用部をS+2.00ジオプタに加入した場合、外カーブ面に近用部を設けたときは、約0.20ジオプタの度数差がある。

【0009】 そこで、図1に示すように、遠用部(1)の内側カーブ面に近用部(3)を設けた構成にすれば、その設計において、前述した度数差分だけ近用部の厚さを薄くすることができる。これは、内側カーブ面の近用部厚さを、外側カーブ面厚さとすれば、それだけ近用部の度数を増大させることができる。

【0010】 しかも、図2の構成説明図に示すように、内側カーブに設けた近用部(3)の光軸は、外側カーブに設けた近用部(2)の光軸よりも、目に近い位置にあるので、近用部(2)に視線を移動する距離は、近用部(3)に視線を移動する距離より短縮される。これは、累進帯域の長さを縮小することを意味する。実験によれば、近用部の度数S+2.00ジオプタにおいて、外側カーブの近用部の場合、視線の移動距離は14～20mmであるのに対し、内側カーブの近用部の場合、10～13mmになることが認められた。

【0011】 本来、遠用部と同様に、近用部においても、その光軸と視線が一致することが理想的なメガネである。その意味で、近用部の光軸へ視線を近づけることができた効果は極めて大きい。

【0012】 また、従来の外側カーブ面に近用部を設けた累進帯レンズでは、近用部の左右にプリズム現象により歪(一般にボケと呼ばれている)が生じ、それが使用上疲労の原因となっており、かつ近用部の幅がせまいことが欠点とされているが、近用部を内側カーブ面に設けた累進帯レンズでは、左右のボケが完全になくなり、左右も累進帯になるので近用部の幅も広くなり、遠用部、近用部共に視野が広がる。

## 【0013】

【発明の効果】 以上に述べたように、本発明によれば、従来の外側カーブ面に近用部を設けた累進帯レンズの欠点を一掃し、従来、限度とされていた近用部の度数の増大、および視線移動距離の短縮化など、顕著な効果が得られる。

## 【図面の簡単な説明】

【図1】 本発明の一実施例を示す多焦点レンズの断面図

【図2】 レンズの構成説明図

【図3】 従来の多焦点レンズの断面図

【図4】 図3の正面図

【図5】 従来の多焦点レンズの主注視線上の屈折力変化図

【符号の説明】

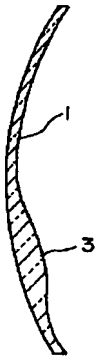
3

4

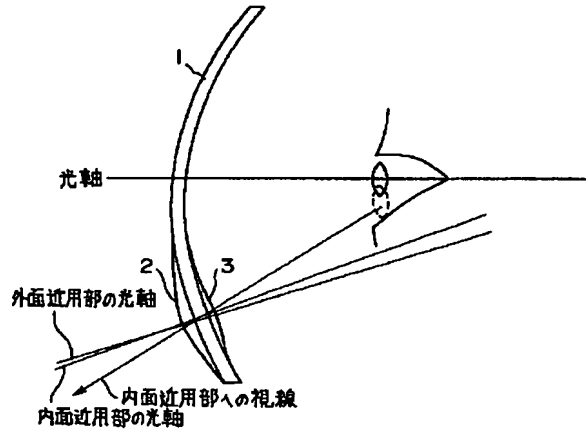
- 1 遠用部  
2 従来の近用部

- 3 本発明の近用部

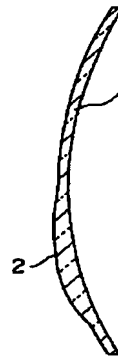
【図1】



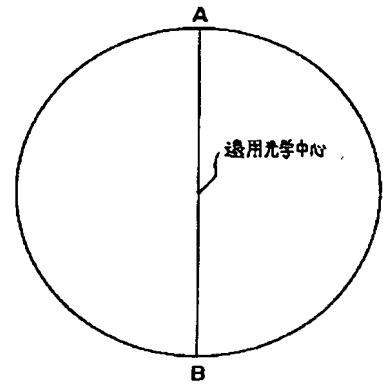
【図2】



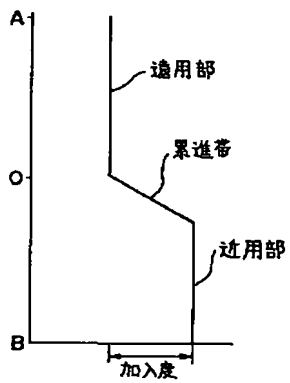
【図3】



【図4】



【図5】



## PATENT ABSTRACTS OF JAPAN

(11)Publication number : 06-118353

(43)Date of publication of application : 28.04.1994

(51)Int.Cl.

G02C 7/06

(21)Application number : 04-287094

(71)Applicant : YAMAGUCHI KIYOSHI

(22)Date of filing : 02.10.1992

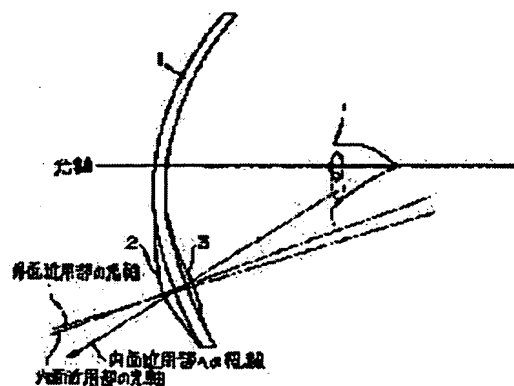
(72)Inventor : YAMAGUCHI KIYOSHI

## (54) MULTI-FOCUS LENS

## (57)Abstract:

PURPOSE: To constitute the multi-focus lens so that a number of degree of a near use part being a limit up to the present can be raised, and also, a line of sight can be brought close to an optical axis of the near use part.

CONSTITUTION: In the multi-focus lens, a near use part 3 is provided on the inside curve surface of a distant use part 1 through a progressive zone. In the case of a single focus lens, at the time of looking at from the inside curve surface and the outside curve surface, respectively, there is a little difference of a number of degree between both of them even in the case of the same number of degree. Therefore, according to the constitution in which the near use part 3 is provided on the inside curve surface instead of providing a near use part 2 on the outside curve surface, the number of degree of the near use part can be raised by the same thickness of the near use part. Also, a line of sight can be brought close to an optical axis of the near use part.



## LEGAL STATUS

[Date of request for examination] 10.08.1995

[Date of sending the examiner's decision of rejection] 13.10.1998

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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CLAIMS

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[Claim(s)]

[Claim 1] The multifocal lens characterized by preparing the progressive band reading point in the inside curve side of a distance point.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the lens for glasses, and relates to amelioration of a bifocal progressive multifocal lens especially.

[0002]

[Description of the Prior Art] As the conventional progressive multifocal lens is shown in drawing 3 -4, the thing of the structure which formed the reading point (2) in the lower part of the outside curve side of a distance point (1) through the progressive band at one is used abundantly. Drawing 5 shows change of the surface refractive power on main gaze line A-B of this multifocal lens.

[0003]

[Problem(s) to be Solved by the Invention] If it is in the progressive multifocal lens of the above-mentioned configuration and a reading point (2) is thickened, in order to raise the frequency of the section prepared in a distance point, and a reading point, since the range of astigmatism (torsion phenomenon of a refracting interface with a progressive band) will become large, as for the thing in which current manufacture is possible, 3.00 JIIBUTA is made into the limit whenever [ subscription ]. Moreover, if a reading point is thickened in order to raise the frequency of a reading point, as for a lens, distortion will become large by prism change so much.

[0004]

[Objects of the Invention] This invention was made in order to cancel the fault of the progressive multifocal lens mentioned above, it makes it possible to raise conventionally the frequency of the reading point made into the limit, and sets it as the main purpose to offer the lens for multifocal glasses which can suppress astigmatism to the minimum and can constitute it.

[0005]

[Means for Solving the Problem] As a result of conducting a research experiment variously about the above-mentioned problem, paying attention to a frequency difference being between the outside curve side of a single focal lens, and an inside curve side, this invention person is using this frequency difference, and used to aim at solution of the above-mentioned problem. That is, this invention makes the summary the configuration which prepared the reading point connected with the progressive band to the inside curve side of a distance point in the configuration of a progressive multifocal lens.

[0006]

[Function] the case where the reading point prepared in an inside curve side is prepared in an outside curve side according to the above-mentioned configuration -- comparing -- both frequency -- it becomes possible to make only difference thin. Thus, if a reading point can be made thin, since the range of astigmatism will be reduced inevitably, the multifocal-glasses lens beyond the reading point frequency made into the limit is obtained conventionally.

[0007]

[Example] One example of this invention is shown in drawing 1 . In this drawing, (1) is a distance point and (3) is the reading point formed in the inside curve side of a distance point through the progressive

band at one. Drawing 2 is the configuration explanatory view which made the conventional lens and the lens of this invention contrast.

[0008] With a single focal lens, although a some difference is among both also with the main thickness of a lens also in the same frequency when it sees from an inside curve side and an outside curve side, respectively, there is a frequency difference (in respect of an outside curve, it subtracts in respect of plus and an inner curve) of about 0.05 JIOBUTA. Moreover, when a distance point is made into S+2.00 JIOBUTA, S+2.00 JIOBUTA is joined in a reading point and a reading point is prepared in an outside curve side, there is a frequency difference of about 0.20 JIOBUTA.

[0009] then, the frequency mentioned above in the design when making it the configuration which prepared the reading point (3) in the inside curve side of a distance point (1), as shown in drawing 1 -- only difference can make thickness of a reading point thin. This can increase the frequency of a reading point so much, if reading point thickness of an inside curve side is made into outside curve side thickness.

[0010] And since the optical axis of a reading point (3) prepared in the inside curve is in the location near [ optical axis / which was prepared in the outside curve / of a reading point (2) ] an eye as shown in the configuration explanatory view of drawing 2 , the distance which moves a look to a reading point (2) is shortened from the distance which moves a look to a reading point (3). This means reducing the die length of a progressive band. According to the experiment, in the case of the reading point of an outside curve, in frequency S+2.00 JIOBUTA of a reading point, having been set to 10-13mm was admitted to the migration length of a look being 14-20mm in the case of the reading point of an inside curve.

[0011] It is ideal glasses that the optical axis and look are originally in agreement also in a reading point like a distance point. The effectiveness which was able to bring the look close to the optical axis of a reading point in the semantics is very large.

[0012] Moreover, although distortion (generally called dotage) arises according to a prism phenomenon in right and left of a reading point, and it causes fatigue on use and it is made into the fault with the progressive band lens which prepared the reading point in the conventional outside curve side for the width of face of a reading point to be narrow With the progressive band lens which prepared the reading point in the inside curve side, since dotage of right and left is lost completely and right and left also become a progressive band, the width of face of a reading point also becomes large, and, in a distance point and a reading point, a visual field becomes large.

[0013]

[Effect of the Invention] As stated above, according to this invention, the fault of the progressive band lens which prepared the reading point in the conventional outside curve side is swept away, and remarkable effectiveness, such as increase of the frequency of a reading point made into the limit and shortening of look migration length, is acquired conventionally.

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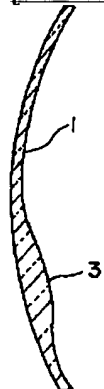
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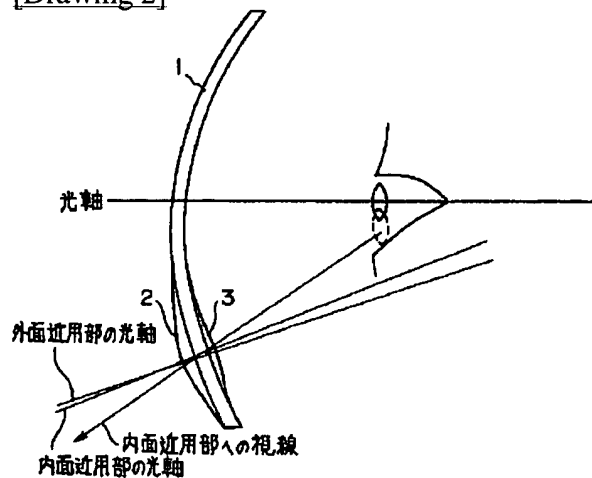
DRAWINGS

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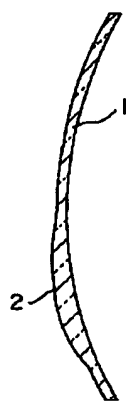
[Drawing 1]



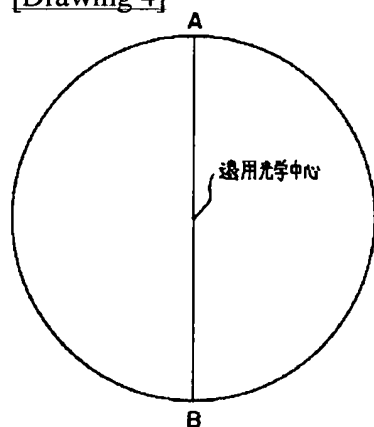
[Drawing 2]



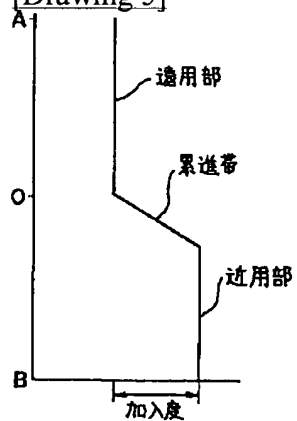
[Drawing 3]



[Drawing 4]



[Drawing 5]



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[Translation done.]